

REMARKS

In response to the Examiner's final rejection, applicants have amended Claim 5 to recite a lining support plate in which a first portion of each pin protrudes into the base plate "below the support surface" and a second portion of each pin projects out of the support surface of the base plate. Claim 8 is also amended to recite that the first portions of the pins cast into the base plate are contoured "and surrounded by the cast iron of the base plate." No new matter is involved in the amendment of the claims.

The invention relates to a lining support plate with a cast metal base plate having a support surface to receive a friction lining material and wherein a plurality of retaining elements project out of the support surface. The base plate is made from cast iron, and the retaining elements are individual pins which are cast into the base plate during the production thereof. A first portion of each pin protrudes into the base plate below the support surface and a second portion of each pin projects out of the support surface of the base plate.

As embodied in the specification, the lining support plate is formed in a casting mold (Figure 3) wherein retaining elements in the form of pins 6a-6d are partly inserted into the casting mold and protrude into a casting cavity. A casting melt introduced into the casting cavity surrounds the protruding portions of the pins which are not embedded in the casting mold. When the melt is solidified, the protruding portions of the pins are embedded in the cast material. After the cast material is removed from the mold, a first portion of each pin protrudes into the lining support plate below the support surface and a second portion of each pin projects out of the support surface of the lining support plate to anchor a friction lining material to the support plate.

The retaining elements are individual pins which are located in the casting cavity before the casting melt is introduced. The individual pins are not formed by the casting melt. Instead, the

each pin has a first portion which protrudes into the lining support plate below the support surface and which is surrounded by the cast iron of the base plate. In addition, each pin has a second portion which projects out of the support surface and into the friction lining material applied to the support surface. It is disclosed at page 3, lines 16-19 of the specification, that the introduction of pins during the casting offers the advantage that the pins cannot be sheared off and are anchored better in the lining support plate.

Claim 5 defines a lining support plate with a cast metal base plate made of cast iron with a plurality of retaining elements projecting out of a support surface which receives a friction lining material. Claim 5 recites that the retaining elements are individual pins which are cast into the base plate during the production thereof. Further, Claim 5 recites that a first portion of each pin protrudes into the base plate below the support surface and a second portion of each pin projects out of the support surface of the base plate.

In the Official Action, Claims 5, 7, 8 and 10 were rejected under 35 U.S.C. §103(a) as obvious over Bunker US 6,279,222 in view of Cole et al GB 2,299,382. The Examiner relied on Bunker for disclosure of a lining support plate including a cast metal base plate 12 made of cast iron with a support surface 12a for receiving a friction lining material 14 and wherein a plurality of retaining elements or projections 28 are cast into the base plate 12 during production. The Examiner asserted that the projections 28 have a second portion which projects out of the support surface 12a. But, the Examiner acknowledged that the Bunker reference does not disclose that the retaining elements (projections 28) are individual pins with first portions which protrude into the base plate.

Further, the Examiner relied on GB 2,299,382 for disclosure of a backplate 10 of cast iron which includes a friction material receiving surface 14 with a pattern of projections 12 extending therefrom that are cast integrally with the backplate 10. The

Examiner asserted that, since the projections/pins 12 are cast integrally with the remainder of the backplate (not welded or adhesively bonded), the localized melting which occurs between the surfaces of the pyramidal bases of the projections/pins 12 and the surface of backplate 10 (which could be made from an even lower melting metal such as aluminum, rather than iron) would effect a metallurgical diffusion bond therebetween, resulting in individual "casting-in" of the first (base) portions of the retaining elements into the base plate.

The Examiner's comments on GB 2,299,382 indicating that the backplate 10 and the projections 12 can be formed from different materials, e.g., iron and aluminum, which are metallurgically bonded together are not supported by the disclosure. Instead, it is explicitly disclosed that the projections are cast integrally with the remainder of the backplate. See page 2, lines 13-14, of GB 2,299,382. The projections and the remainder of the backplate are produced from the same material and at the same time in one casting process. GB 2,299,382 does not disclose that the projections are made from other material than the body of the backplate. The reference does not disclose the formation of a metallurgical diffusion bond between the projections and the remainder of the backplate. There is no suggestion of casting the projections and the remainder of the backplate at different times which would be a prerequisite for a metallurgical diffusion bond. GB 2,299,382 merely discloses that iron, aluminum or other metal may be used as the casting material of the backplate. See page 2, lines 28-29, and the abstract of GB 2,299,382. Since it is disclosed that the projections are cast integrally with the backplate, the same material is used for both the projections and the backplate. Further, the projections and the backplate would be formed at the same time as the casting material is solidified.

According to the Examiner's view, it would be obvious to modify the Bunker brake pads by using the retaining elements that are individual (and integral) pins having first portions that would protrude into the base plate as taught or suggested by GB

2,299,382. However, there is no indication in GB 2,299,282 that the projections 12 protrude into the backplate 10. Instead, as shown in FIGS. 1 and 2, the projections 12 merely extend upward from the surface 14 of the backplate 10. No portions of the projections 12 protrude into the backplate 10.

As recited in Claim 5, the retaining elements are individual pins cast into the base plate during the production thereof. The pins are introduced into the casting cavity before the cast iron melt is introduced into the cavity to form the base plate. In comparison with producing projecting retaining elements from the cast material itself, the introduction of the pins during casting offers the advantage that the pins cannot be sheared off and are anchored better in the lining support plate. See page 3, lines 16-19 of specification. In contrast, Bunker and GB 2,299,382 merely disclose lining support plates in which the projections are cast integrally with the base plates. Thus, neither of the references suggests that the retaining elements are individual pins introduced into the casting cavity before the cast iron melt and cast into the base plate for improved anchoring of the pins in the cast material.

Further, amended Claim 5 recites that a first portion of each pin protrudes into the base plate below the support surface. This structure also enhances the anchoring of the pins in the base plate. As noted above, neither Bunker nor GB 2,299,382 disclose lining support plates in which the projections have first portions which protrude into the cast iron of the base plate below the support surface. Thus, even if the references are combined as proposed by the Examiner, this structure recited in Claim 5 would not be achieved. Accordingly, applicants submit that Claim 5 defines patentable subject matter and request that the Examiner withdraw the §103 rejection.

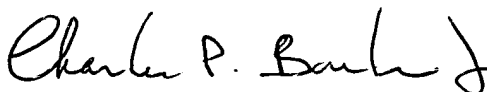
Dependent Claim 8 recites that the first portions of the pins cast into the base plate are contoured and surrounded by the cast iron of the base plate. As discussed above, neither Bunker nor GB 2,299,382 disclose lining support plates in which the

projections have first portions which protrude into the cast iron of the base plate below the support surface. Further, neither reference discloses or suggests that the projections have first portions which are contoured and surrounded by the cast iron of the base plate. Accordingly, applicants believe that Claim 8 defines patentable subject matter over the cited references.

Regarding the Examiner's rejections of dependent Claims 6, 7 and 10, applicants submit that these claims define patentable subject matter over the cited references for at least the same reasons discussed above in connection with Claim 5.

For the reasons previously stated, applicants submit that Claims 5-8 and 10 are patentable and requests allowance of this application.

Respectfully submitted,



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